



**SITE ASSESSMENT REPORT
ST. LOUIS AUTO SHREDDING DRUM DISPOSAL SITE
MADISON, ST. CLAIR COUNTY, ILLINOIS**

Prepared for:

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 5 Emergency Response Branch
c/o Crab Orchard National Wildlife Refuge
8588 Route 148
Marion, IL 62959

TDD No.:	S05-0108-037
Date Prepared:	04 Dec 01
Contract No.:	68-W-00-129
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1.0 INTRODUCTION

The Tetra Tech EM Inc. Superfund Technical Assessment and Response Team (START) was tasked by the U. S. Environmental Protection Agency (U.S. EPA) under Technical Direction Document (TDD) No. S05-0108-037 to perform a site assessment at the St. Louis Auto Shredding Drum Disposal (Drum Disposal) site in Madison, St. Clair County, Illinois. START was assigned to compile available site information, develop a site safety plan, perform a site inspection, collect soil samples, procure an analytical laboratory for the samples, conduct analytical data validation, provide a written log documenting all on-site activities, evaluate potential threats to human health and the environment, and prepare this site assessment report.

The site assessment was performed in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and Title 40 of the *Code of Federal Regulations* (40 CFR), Section 300.415, Paragraph (b)(2), to evaluate on-site conditions and possible site-related threats to human health, welfare, and the environment. This report discusses the site background, site assessment activities (including sampling activities), sampling activities, analytical results, and potential site-related threats, and provides a summary of the assessment. Appendix A contains validated analytical results for soil samples collected during the site assessment, and Appendix B provides a list of witnesses present during site assessment activities.



2.0 SITE BACKGROUND

The description and history of the Drum Disposal site are discussed below.

2.1 SITE DESCRIPTION

The Drum Disposal site is located in Madison, St. Clair County, Illinois (see Figure 1). The geographical coordinates of the Drum Disposal site are latitude 38° 39' 20.18" North and longitude 90° 08' 25.99" West. The Drum Disposal site is the former main disposal area for the St. Louis Auto Shredding site, which is currently listed on the Comprehensive Environmental Response, Compensation, and Liability Inventory System (CERCLIS) list. The Drum Disposal site is located nearly 0.75 mile north of the St. Louis Auto Shredding site.

The Drum Disposal site is located in the northwest corner of the crossing of the former Illinois Terminal Electric Railroad grade running north to south and the Cahokia Canal running east to west (see Figure 2). The Gateway National Golf Links golf course surrounds the Drum Disposal site on the east, north, and west, and the Cahokia Canal borders the site to the south. The main disposal area is a clearing in a wooded area containing burn residue, patches of rubbery matter, and stressed vegetation. The clearing measures approximately 100 by 150 feet. START assessed an area encompassing approximately 150 by 200 feet, which extends into the wooded area. The Drum Disposal site slightly slants west-southwest toward a heavily wooded area. The wooded area extends to an area of wetland vegetation near the site. The wetland is located around the outer edge of the golf course and is not observed to flow into any other surface water body.

2.2 SITE HISTORY

In 1993, a group of hunters walking along the railroad grade east of the site reported numerous overturned and unlidded drums at the Drum Disposal site. Later that year, a privately funded site inspection (SI) was conducted at the Drum Disposal site. The SI report documents the presence of more than 25 drums at the Drum Disposal site. Various drums were unlidded, turned upside-down, or riddled with bullet holes. The drum contents were categorized as paint pigments, paint sludge, and epoxy material. Analytical results from the SI drum sampling activities revealed that the drum contents contained polychlorinated biphenyls (PCB), metals, volatile organic compounds (VOC), and semivolatile organic compounds (SVOC). In 1996, these drums were removed from the Drum Disposal site during privately funded removal activities.

In 1998, the Illinois State Geological Survey (ISGS) collected several soil samples from 1 to 9 feet below ground surface (bgs) at the Drum Disposal site. Analytical results showed levels of various metals, including lead, that exceeded the Tiered Approach to Corrective Action Objectives (TACO) Tier 1 soil remediation levels (400 milligrams per kilogram [mg/kg] for lead) and Toxicity Characteristic Leaching Procedure (TCLP) levels (5 milligrams per liter [mg/L] for lead). PCBs were also detected at concentrations exceeding the Toxic Substances Control Act (TSCA) regulatory limit of 50 parts per million (ppm). Also in 1998, the Illinois Department of Transportation (IDOT) assigned Ecology & Environment, Inc. (E & E), to characterize site soil as part of an IDOT project to relocate a roadway. Analytical results from the E & E investigation confirmed previous soil analytical results that revealed PCB, metal, VOC, and SVOC contamination. As a result of E & E's assessment, the Drum Disposal site was referred to the Illinois Environmental Protection Agency's (IEPA) Site Assessment Unit (SAU).

In Spring 2000, the IEPA SAU began a pre-CERCLIS screening action in conjunction with the U.S.



EPA at the Drum Disposal site. Previous investigations showed that the contaminated soil at the site could potentially affect nearby wetland areas. The intent of the pre-CERCLIS screening action was to ascertain if potentially contaminated sites should be placed onto CERCLIS. Analytical results from the IEPA pre- CERCLIS screening action activities confirmed that soil at the site contains elevated concentrations of PCBs and metals. IEPA's activities also indentified elevated levels of PCBs, zinc, and lead in sediment in the wetland areas near the Drum Disposal site. The IEPA pre-CERCLIS screening action report recommends that the Drum Disposal site be referred to the U.S. EPA for potential removal activities and placement on CERCLIS.

On 14 Sep 01, U.S. EPA On-Scene Coordinator (OSC) Kevin Turner, Tetra Tech START, and Project Resources, Inc. (PRI), conducted a site assessment at the Drum Disposal site. Site assessment activities are discussed in Section 3.0.



FIGURE 1 SITE LOCATION MAP

3.0 SITE ASSESSMENT ACTIVITIES

START was tasked to perform site assessment activities that included a site reconnaissance and sampling activities. Each activity is discussed below.

3.1 SITE RECONNAISSANCE

At approximately 0900 on 14 Sep 01, START members Jennifer Mueller and Sara Giedeman; U.S. EPA OSC Turner; IEPA representative Mark Wagner; and PRI representative James Sheehan arrived at the parking lot of the Gateway National Golf Links golf course in Madison, Illinois. Golf carts were rented and driven along the railroad grade to the southeast corner of the Drum Disposal site. A cart path was created through the wooded area west of the railroad grade to the site clearing. At 0920, U.S. EPA and START conducted the site reconnaissance, which consisted of observing site conditions and determining locations for x-ray fluorescence (XRF) screening and soil sampling.

At 0930, PRI began XRF screening and START began soil sampling activities (see Section 3.2). The site assessment was completed at 1230 on 14 Sep 01.

3.2 SAMPLING ACTIVITIES

A total of 35 locations in a rough grid pattern were screened with an XRF, and 4 soil samples were collected. XRF screening and soil sampling locations are shown in Figure 2. START sampled soil at potentially sensitive areas specified by U.S. EPA OSC Turner based on locations showing high XRF contaminant concentrations and marked the sampled areas with survey flags. Table 1 summarizes XRF screening results for detected metals. START collected grab surface soil samples SS-1 through SS-4 (see Figure 2) in Level D personal protective equipment using dedicated sampling equipment. The collected samples were placed in sample jars and submitted for laboratory analysis based on the judgment of U.S. EPA OSC Turner and XRF field screening results. Sample descriptions are presented in Table 2. Section 4.0 discusses soil sample analytical results.

TABLE 1
XRF SCREENING RESULTS

Location	Description	Concentration Detected (ppm)										
		Fe	Zn	Pb	Cu	Cr	Hg	Sr	Zr	As	Co	Mo
1	Surface	118,000 0	117,000 0	22,400	4,110	ND	514	264	ND	1,500	ND	532
2	Surface	100,000 0	14,500	63,900	3,180	4,180	ND	228	ND	4,920	ND	260
3	Surface	19,900	2,780	19,000	ND	ND	ND	ND	ND	1,900	ND	ND
4	Surface	48,000	16,200	27,900	ND	ND	ND	212	ND	1,120	ND	105
5	Surface	45,000	8,680	24,600	ND	1,680	ND	175	ND	ND	ND	138
6	Surface	40,200	7,400	20,500	ND	2,750	ND	267	ND	1,200	ND	242
7	Surface	35,000	30,800	16,500	ND	1,750	ND	213	ND	737	ND	146
8	Surface	41,900	17,200	13,300	14,000	4,510	3,080	110	ND	ND	ND	296
9	Surface	144,000 0	24,200	77,900	6,720	4,140	ND	ND	ND	4,180	ND	211
10	Surface	41,600	9,310	31,700	2,090	ND	ND	78.4	ND	1,890	ND	150
11	Depth = 3 to 4 inches bgs	17,500	4,170	14,300	ND	ND	ND	184	ND	1,040	ND	190
12	Surface	85,500	19,000	35,600	5,080	5,780	650	ND	ND	2,160	ND	163
13	Surface	67,000	16,100	42,700	4,900	6,990	823	ND	ND	2,600	ND	845
14	Surface	78,600	30,200	37,100	ND	2,390	ND	163	ND	1,290	ND	129
15	Surface	260,000 0	139,000 0	4,650	ND	6,620	ND	1,050	ND	ND	ND	69.8
16	Surface	19,000	3,720	3,800	916	1,630	231	52.6	ND	ND	ND	ND
17	Surface	332,000 0	11,200	7,490	6,260	ND	1,450	240	ND	ND	ND	95.9
18	Surface	42,100	13,800	4,750	17,300	3,500	3,890	ND	41.8	ND	2,230	108
19	Surface	59,000	39,900	13,300	ND	2,180	ND	125	ND	755	ND	438
20	Surface	39,200	26,200	13,600	ND	1,790	ND	151	ND	ND	ND	346
21	Depth = 3 to 4 inches bgs	22,100	8,000	25,400	1,250	1,870	ND	114	ND	ND	ND	838
22	Surface	19,200	1,900	1,220	ND	ND	ND	64.9	ND	ND	ND	ND
23	Surface	28,900	6,300	5,580	ND	1,480	ND	175	ND	ND	ND	276
24	Surface	73,300	20,300	13,300	ND	ND	ND	177	ND	1,250	ND	97.2
25	Surface	42,400	7,870	18,700	ND	1,980	ND	257	ND	902	ND	41.3
26	Depth = 3 to 4 inches	25,000	4,760	10,500	ND	1,620	ND	99.9	ND	ND	ND	36.3

27	Surface	39,000	13,900	7,440	ND	1,200	ND	93	ND	ND	ND	28
28	Surface	68,000	81,600	3,260	ND	ND	ND	79	ND	ND	ND	ND
29	Surface	109,000	17,900	9,050	ND	6,440	ND	469	ND	ND	ND	ND
30	Surface	62,700	22,600	29,400	ND	1,920	ND	189	ND	2,200	ND	216
31	Surface	324,000	39,000	175,000	4,830	ND	ND	ND	ND	13,600	ND	ND
32	Depth = 3 to 4 inches bgs	67,200	13,100	35,300	ND	2,770	ND	512	ND	2,910	ND	368
33	Depth = 2 inches bgs	34,900	17,400	6,500	ND	4,010	ND	532	ND	ND	ND	117
34	Depth = 3 to 4 inches bgs	24,700	6,780	32,100	1,730	2,730	ND	204	ND	1,680	ND	1,090
35	Surface	8,220	5,410	795	ND	ND	ND	42.3	ND	ND	ND	ND

Notes:

As
bgs
Below ground surface
Co
Cr
Cu
Fe
Hg
Chromium
Copper
Iron
Mercury

Mo
ND
Pb
ppm
Sr
Zn
Zr
Molybdenum
Not detected
Lead
Part per million
Strontium
Zinc
Zirconium

TABLE 2
SAMPLE DESCRIPTIONS

Sample No.	Date	Time	Description
SS-1	14 Sep 01	0955	Collected from XRF screening locations 2 and 11
SS-2	14 Sep 01	1105	Collected from XRF screening locations 25 and 26
SS-3	14 Sep 01	1135	Collected from XRF screening locations 31 and 32
SS-4	14 Sep 01	1155	Collected from XRF screening locations 8 and 34

Figure 2: XRF Screening Locations and Soil Sampling Locations

4.0 ANALYTICAL RESULTS

START submitted all four surface soil samples collected to Pace Analytical Services in Lenexa, Kansas, for analysis under analytical TDD No. S05-0109-003. The samples submitted for analysis and the parameters analyzed for were chosen by U.S. EPA OSC Turner. Analytical results are summarized in Table 3.

All samples were analyzed for total metals (Method 6010), mercury (Method 7471), Toxicity Characteristic Leaching Procedure (TCLP) metals (Method 6010), TCLP mercury (Method 7470), PCBs (Method 8082), and pH (Method 9045).

The pH levels of all samples were within the regulatory limit of 2.0 to 12.5. According to 40 CFR Section 261.22, Paragraph (a)(1), none of the samples are considered to have the hazardous waste characteristic of corrosivity.

For total metals analyses, sample concentrations were compared to residential soil preliminary remediation goals (PRG) set by U.S. EPA Region 9. Results for all samples except Sample No. SS-4 exceeded the regulatory limit for arsenic. All sample concentrations exceeded the regulatory limits for chromium and lead. Samples No. SS-1 and SS-4 exceeded the regulatory limit for barium. No sample results exceeded the regulatory limits for cadmium, selenium, silver, or mercury. For TCLP metals analyses, sample concentrations were compared to toxicity limits set forth in 40 CFR Section 261.24, Paragraph (b), Table 1. For the TCLP metals analyses, all samples exceeded the regulatory limit for lead. No sample concentrations exceeded the TCLP regulatory limits for arsenic, barium, cadmium, chromium, selenium, silver, or mercury. For PCB analyses, sample concentrations were compared to residential soil preliminary remediation goals (PRG) set by U.S. EPA Region 9. All sample concentrations exceeded the regulatory limit for the PCB congener Aroclor-1254. Results for all samples except Sample No. SS-3 exceeded the regulatory limit for the PCB congener Aroclor-1260. No sample concentrations exceeded the regulatory limits for Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, or Aroclor-1248.

TABLE 3
SURFACE SOIL SAMPLE ANALYTICAL RESULTS

Parameter	Regulatory Limit	Sample No.			
		SS-1	SS-2	SS-3	
Metals (mg/kg)					
Arsenic	0.39	479	12.4	894	1.7 J
Barium	5,400	6,190	4,910	3,230	6,220
Cadmium	37	12.6	17	22.7	5.91
Chromium	30	535	1,390	339	1,530
Lead	400	103,000	34,400	80,600	20,100
Selenium	390	ND	4.8 J	ND	2.0 J
Silver	390	14.6	2.86	30.3	1.43
Mercury	23	2.24	1.06	2.89	1.88
TCLP Metals (mg/L)					
Arsenic	5.0	0.0335 J	ND	0.0069 J	ND
Barium	100	0.732	2.22	0.442	3.44
Cadmium	1.0	0.0583	0.0737	0.169	0.0234
Chromium	5.0	ND	0.0038 J	ND	0.0067 J
Lead	5.0	856	51.8	906	15.7
Selenium	1.0	ND	0.0239 J	ND	0.0106 J
Silver	5.0	0.0239	0.0039 J	0.0274	ND
Mercury	0.2	0.000085 J	ND	ND	ND
PCBs (Fg/kg)					
Aroclor-1016	3,900	ND	ND	ND	ND
Aroclor-1221	220	ND	ND	ND	ND
Aroclor-1232	220	ND	ND	ND	ND
Aroclor-1242	220	ND	ND	ND	ND
Aroclor-1248	220	ND	ND	ND	ND
Aroclor-1254	220	34,000	39,000	7,900	120,000
Aroclor-1260	220	23,000	28,000	ND	110,000
General Chemistry					
pH	>2 or <12.5	7.19	7.9	7.98	7.02

Notes:

Fg/kg	Microgram per kilogram
mg/L	Milligram per liter
mg/kg	Milligram per kilogram
ND	Sample concentration below method detection limit
J	Sample concentration above method detection limit but below reportable limit
PCB	Polychlorinated biphenyl
TCLP	Toxicity characteristic leaching procedure

Shaded cells indicate results above the regulatory limits set forth in (1) 40 CFR Section 261 for TCLP metals and pH and (2) U. S. EPA Region 9 PRGs for metals and PCBs. The residential soil limit was used to be the most conservative.

5.0 POTENTIAL SITE-RELATED THREATS

Paragraph (b)(2) of 40 CFR Section 300.415 lists factors to be considered when determining the appropriateness of a potential removal action at a site. The discussion below summarizes factors applicable to the Drum Disposal site.

- **Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, or pollutants, or contaminants.**

The Drum Disposal site is located near a commercial and recreational area of the Gateway National Golf Links golf course and within a wooded area and wetland areas. The site therefore poses the threat of potential exposure to animals and the food chain from PCB and metals contamination at high levels in site soil. Access to the Drum Disposal site is uncontrolled, which poses health concerns through the potential exposure of human populations to PCB and lead contamination at high levels in site soil.

Harmful effects of lead include low birth weight, premature birth, decreased mental ability in infants, reduced growth in young children, and learning difficulties. Effects of exposure to lead are most severe in developing fetuses in pregnant woman and in young children. Effects of lead exposure in adults include decreased reaction time, inhibition of hemoglobin synthesis (causing anemia), damaged male reproductive system, and increased blood pressure. U.S. EPA considers lead to be a class B2 or probable human carcinogen.

- **Hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate or pose a threat of release.** Elevated levels of PCBs and metals are present in site surface soil according to XRF screening data results and soil sample analytical results. Concentrations of PCBs and metals at elevated levels in surface soil at the site indicate a threat of contaminant migration in melting snow or rain. Airborne contaminant migration is also possible through PCB adsorption to dust particles. Contaminants could also be tracked off site by people and animals that have contacted contaminated areas at the Drum Disposal site. Migration of contaminants from the Drum Disposal site has been determined a potential source of contamination to nearby wetland areas.
- **Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.** Elevated levels of PCBs and metals are present in surface soil at the site. Contaminants could migrate off site through heavy rains or winds that would transport PCBs and heavy metals adsorbed to dust particles. As a result of such weather conditions, PCBs and metals could be continuously released to surrounding soil and air. Migration of contaminants from the Drum Disposal site has been determined a potential source of contamination to nearby wetland areas.

6.0 SUMMARY

The Drum Disposal site is located in a commercial and recreational area of the Gateway National Golf Links golf course in Madison, St. Clair County, Illinois. The site is also located in a wooded area near wetland areas. Access to the site is uncontrolled. Analysis of surface soil samples collected during the site assessment indicate high concentrations of several metals and PCBs. Contaminants present in surface soil at the Drum Disposal site could potentially migrate to off-site areas through surface runoff and wind dispersion.

Because analytical results show high levels of lead and PCBs in soil at the site and because of the site's proximity to the golf course and wetland areas, the Drum Disposal site poses a direct threat to human health and the environment. The site therefore meets the criteria for initiating a removal action as outlined in the NCP and 40 CFR Section 300.415, Paragraph (b)(2).



APPENDIX A
VALIDATED ANALYTICAL DATA PACKAGE
(Five Pages)



APPENDIX B

LIST OF WITNESSES

(One Page)

LIST OF WITNESSES

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04 Dec 01

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Subject: Site Assessment Report
St. Louis Auto Shredding Drum Disposal Site
Madison, St. Clair County, Illinois
Technical Direction Document No. S05-0108-037
Tetra Tech Contract No. 68-W-00-129

Dear Mr. Turner:

The Tetra Tech EM Inc. Superfund Technical Assessment and Response Team (START) is submitting the enclosed site assessment report for the St. Louis Auto Shredding Drum Disposal Site in Madison, Illinois. If you have any questions or comments about the report or need additional copies, please contact me at (314) 892-6322, extension 26, or Thomas Kouris at (312) 946-6431.

Sincerely,

Jennifer Mueller
START Project Member

Enclosure

cc: Lorraine Kosik, U.S. EPA START Project Officer
 Thomas Kouris, Tetra Tech START Program Manager